ASTRA 2Connect

User Manual for Astra2Connect Terminal

version 3.1

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ABOUT THIS MANUAL

This User Manual is intended for the user of the Astra2Connect terminal. It provides safety precautions, a description of the Astra2Connect terminal and a detailed description of how to use the GUI (Graphical User Interface).

First-line troubleshooting information is also included.

Cautions and symbols

The following symbols appear in this manual:

A caution message indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. It may also refer to a procedure or practice that, if not correctly followed, could result in equipment damage or destruction.

A hint message indicates information for the proper operation of your equipment, including helpful hints, shortcuts or important reminders.

A reference message is used to direct to; an internal reference within the document, a related document or a web-link.

Version history and applicability

Document version	Date	Subject version	Author	Comments
1.9.2	November 21st 2007	R 1.6	GWI	Creation for this software release
2.1	October 27th 2008	R 1.7	GWI	Creation for this software release
3.1	January 28th 2009	R 1.8	GWI	Creation for this software release

Related documentation

The details of the installation and pointing of the Astra2Connect dish are described in the Point&Play set-up manual.

IMPORTANT SAFETY PRECAUTIONS

Install the Astra2Connect modem and antenna according to local regulations. For the US market, please visit the Federal Communications Commission's website at www.fcc.gov.

- Before installing the Astra2Connect modem, please make sure that your electrical outlet is properly wired and your computer equipment is properly grounded. Consult with a licensed electrician if in any doubt;
- Please read and understand all operating instructions in your user's guide located in the Astra2Connect modem shipping box;
- Please read and understand all of the safety precautions set forth in this user manual and in the user's guide prior to connecting any cables to the Astra2Connect modem.

Always observe the following warnings:

- There are no user-serviceable parts in your system. Do not attempt to open the system. There is a risk of electrical shock that may result in injury or death. The system should only be opened by a technician trained and certified to service the product;
- RF radiation hazard: The area between the antenna reflector and the iLNB feed horn exposes hazardous electromagnetic field levels during transmission. Do not place your head and/or body in that zone while the system is operational. Take the necessary precautions to prevent access to the antenna by children or unauthorised persons. Keep the space between feed horn and reflector clear!

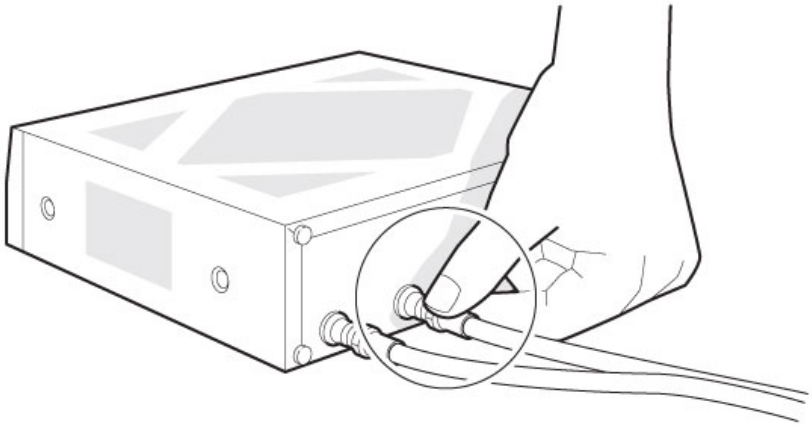
- To prevent the risk of fire or electrical shock, do not expose the system to rain,

liquids or moisture. Do not place any objects containing liquids (e.g., glasses, vases) on the system;

- Do not install the Astra2Connect modem if there is a risk of thunderstorm or lightning activity in the area;
- The in-line power supply input power cord must not be used when damaged in any way!

Always observe the following cautions:

- Always use the in-line power supply included with the Astra2Connect modem. Using a different power supply may cause equipment damage;
- To ensure regulatory and safety compliance, use only the provided cables or cables conform to the specifications within this manual;
- Do not open the unit. Do not perform any servicing other than that described in the installation and troubleshooting instructions. Refer all other servicing to qualified service professionals;
- Static electricity can damage the Astra2Connect modem. To avoid damaging the Astra2Connect modem with static electricity, always touch the grounded coaxial cable connector prior to disconnecting or re-connecting your Ethernet cable from the Astra2Connect modem or your computer;



- To prevent overheating, do not block the ventilation holes on the sides and top of the unit;

- To clean the outside of the unit, use a clean, dry cloth. To avoid equipment damage, never clean the system using fluids, detergents or chemicals. Do not

use pressurized air to remove dust from the unit;

- The user should install an AC surge suppressor in the AC outlet to which the device is connected in order to avoid damage to the equipment from lightning strikes and other electrical surges;

Notices:

- This product was qualified under test conditions that included the use of the supplied cable between the components. To be in compliance with regulations, the user must use this cable – or equivalent – and install it properly;
- Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all product safety requirements of the country of use;
- Installation of this product must be in accordance with the applicable wiring codes.

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1 INTRODUCTION

1.1 Astra2Connect Terminal Documentation

The Astra2Connect Terminal documentation exists out of three documents:

1. This document, describing the features and the terminal web interface of the IPmodem;
2. The Point and Play manual describing the installation and pointing of your antenna;
3. The pointing data, consisting of the information you need to point your antenna to the correct position.

1.2 About the Astra2Connect Terminal

The Astra2Connect Terminal is state of the art equipment allowing cost effective, plug & play connection to an extended variety of IP-based applications.

The Astra2Connect Terminal consists of:

- A small size, high quality, easy to install satellite antenna (79 cm);
- An interactive LNB (iLNB);
- An IPmodem providing an Ethernet connection to the computer of the end-user or Local Area Network (LAN).

The interactive iLNB low power equipment is light weight, easy-to-install and highly reliable. All parts are built using state-of-the-art microwave design that guarantees an unequalled reliability for many years.

Connected to the interactive iLNB by means of transmit and receive cables, the high speed IP modem provides an asymmetrical 2-way broadband access to IP applications (e.g. Broadband Internet Access). Its small size, in line with the best practice in the telecom and IT industries, makes it suited for any type of user, business or consumer.

Figure 1 – Astra2Connect Terminal

1.3 Installation Tasks

To ensure proper installation of the Astra2Connect Terminal, the following tasks must be performed.

These tasks are described in detail in the Point&Play Manual of your IPmodem. Please read this Point&Play Manual carefully during installation.

- Prepare the installation site and unpack the devices;
- Select a suitable location to set up the antenna. A clear view to the South must be available (satellite position). The distance between the antenna and the IPmodem may not exceed 30 metres. Ideally, this distance shall not exceed 30 metres if making use of the cable provided with the Astra2Connect Terminal;
- Set up the antenna pole and attach the masthead to it;
- Attach the antenna to the masthead;
- Attach the iLNB to the antenna;
- Place the IPmodem in a clean, dry room at maximum 30 m (cable length) from the antenna site;
- Connect the IPmodem to the iLNB using the Rx and Tx coax cables;
- Connect a computer (desktop or laptop) to the IPmodem;
- Power the IPmodem;
- Use a web browser on the computer to access the Terminal Web Interface;
- Point the antenna towards the correct satellite, fine-tune pointing and verify the cross polarisation;
- Configure the terminal using the web interface and/or check the connectivity.

2 GETTING TO KNOW YOUR ASTRA2CONNECT TERMINAL

2.1 The IPmodem

2.1.1 The IPmodem Front Panel

Figure 2 – The IPmodem Front Panel

Nr	What	Description
(1)	Power LED	Green continuous – when powered up.
(2)	Warning LED	Yellow continuous – when the terminal is not logged on to the satellite network.
(3)	LAN indicator LEDs	Left: Green continuous – link layer status. Right: Green blinking – Ethernet frames are received or transmitted.
(4)	Rx indicator LED	Green continuous – forward satellite signalling receiving.
(5)	Tx indicator LED	Green blinking – traffic transmitting via the satellite link.

Table 1 – Description of the Elements on the IPmodem Front Panel

2.1.2 The IPmodem Back Panel

Figure 3 – The IPmodem Back Panel

Nr	What	Description
(1)	Tx connector	Indoor connection for the transmit coax cable.
(2)	Rx connector	Indoor connection for the receive coax cable.
(3)	Reset button	Reboot: press once briefly (hold less than 5 seconds); Factory Reset: press and hold for more than 5 seconds. Resetting will also reboot the terminal and change all the IP-settings back to the default factory settings.
(4)	15V power cable connector	Power connector (5.5/2.5mm plug).
(5)	Ethernet cable connector	Connection for the LAN, type RJ-45 (Ethernet cable).

Table 2 - Description of the Elements on the IPmodem Back Panel

2.1.3 The Power Supply

Figure 4 - IPmodem Power Supply

- Universal input range: nominal 100 – 240 Volt / 50 – 60 Hz;
- NEMA - IEC320/C8 socket;
- CE approved;
- Output 15V / 2A;
- Plug 5,5 x 2,5 mm.

2.1.4 Cables

2.1.4.1 Ethernet Cables

Included with your Astra2Connect Terminal is a crossed red Cat-5 Ethernet cable with RJ-45 connectors. This cable is approximately 2 m long. It will be used to connect the IPmodem to your computer.

The IPmodem Ethernet connection also supports auto cross-over. Alternatively, so also a straight Ethernet cable can be used.

2.1.4.2 Coaxial Cables

There are two separate cables between the antenna and the indoor equipment: the receive cable (Rx) and transmit cable (Tx). These coaxial cables (coax) are approximately 1 cm in diameter and are 30 m long. Delivered with your system is a combined twin cable with Rx and Tx cable attached to each other.

The F-connectors are not attached to the cable yet for easy installation of the cable. Four screw-on connectors are delivered with the coax cable.

- RG6 foam equivalent;
- Specified up to 3GHz;
- F-connectors.

For an installation that requires a cable longer than 30 metres, another cable (set) can be used. The overall requirement is then:
Attenuation @ 3000 MHz < 20 dB
The provided cable has an attenuation of ~ 14 dB @ 3000MHz (30 m of cable).

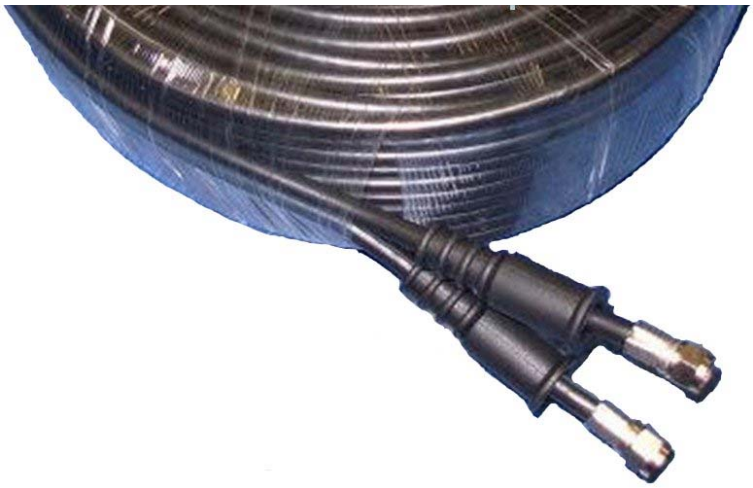


Figure 5 - Coaxial Twin Cable with Connectors Attached

2.1.4.3 The Pointing Tool

The pointing device, with the functionality as shown in Figure 6, is delivered with an earphone as displayed in Figure 7 and appropriate battery.

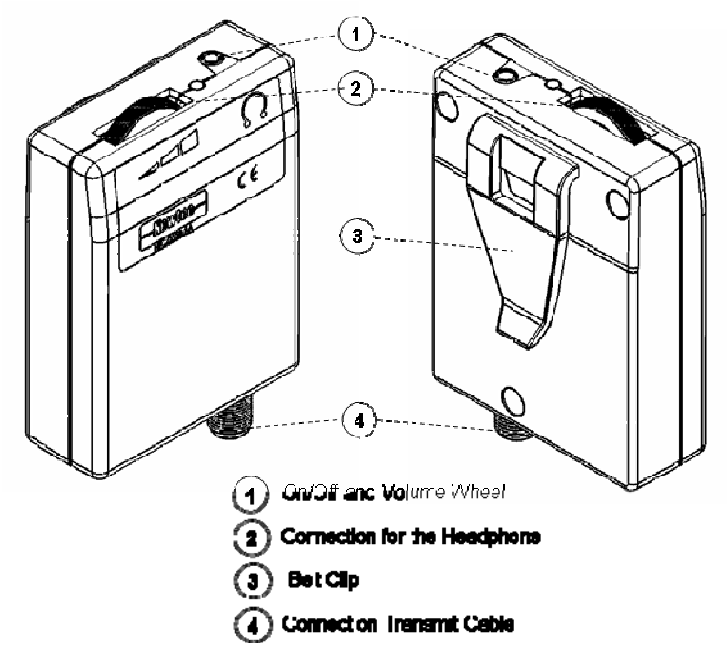


Figure 6 – Pointing Device

The dimensions of the device are:

- Height: 29.02 mm;
- Length: 81.82 mm;
- Width: 61.56 mm.

Figure 7 – Earphone

2.1.4.4 Antenna

Overview

The antenna comprises five parts:

- Antenna pole;
  - See below for the antenna pole requirements;
- Masthead;
  - Completely pre-assembled;
  - Elevation and azimuth fine-pointing adjust cams.
- Antenna reflector (dish);
  - 79 x 85 cm pressed sheet metal with heavy-duty rim;
  - Steel is passivated and epoxy powder coated;
  - Fixed with 4 bolts.
- Feed arm;
  - Feed Arm is a steel part, precision formed;
  - Steel is passivated and epoxy powder coated;
  - Fixed to masthead with 2 x M6 bolts;
  - Feed clamp snaps inside feed arm;
  - Feed clamp is Glass-Filled Nylon;
  - All plastic parts are UV-stabilised.
- iLNB (see section 8.2 for more information).

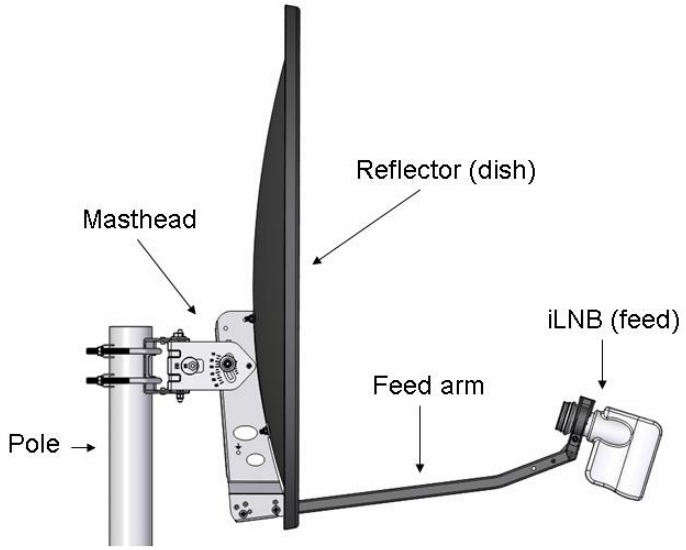


Figure 8 - Antenna Overview & Elements

Antenna Pole Requirements

When selecting an antenna pole, keep in mind the following dimensions:

- Dimensions;
  - Minimum diameter: 40mm;
- Maximum diameter: 70mm;
- Galvanised steel;

- Solid base / fixation.

The mechanical forces that need to be considered in the fixation of the antenna pole are shown in the picture below.

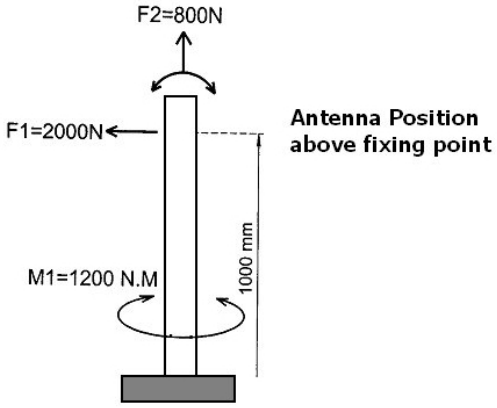


Figure 9 - Antenna Pole Stress and Forces

2.2 The iLNB

The iLNB has an integrated casing and is fully sealed except for its ventilation slots.

Figure 10 - iLNB > Perspective and Bottom View

Nr	What	Description
(1)	Feed horn	Radiating feed horn of the iLNB, pointed towards reflector.
(2)	Tx connector	Outdoor connection for the transmit coax cable.
(3)	Rx connector	Outdoor connection for the receive coax cable.

Table 3 - Description Elements of the iLNB

3 TERMINAL WEB INTERFACE

3.1 Prepare the Settings of Your Computer

Check if your computer is set to DHCP. This way the computer can receive an IP address from the IPmodem.

Follow the procedure in Appendix B – Checking and Changing your IP Settings to check and/or change your IP settings.

3.2 How to Access the Terminal Web Interface?

3.2.1 With Satellite Connection

In the normal operational mode a connected computer should be configured in DHCP mode to retrieve an IP address automatically and to retrieve the DNS server. The terminal acts as a DHCP server for the computer.

Browse to the web interface

➢ Type the IPmodem's address in the address bar of the browser: 192.168.1.1.

You will be re-directed to the Status page of the terminal.

Figure 11 – The IPmodem's Address in the Address bar of the browser

Alternatively, use the Default Gateway address to reach the web interface. See Appendix A – Local Network Configuration for more information.

It is possible that **during first logon** the terminal will perform an upgrade with the latest software since you cannot login using the old SW. This process can take up to **ten minutes**. **You may NOT interrupt the terminal yourself during this period, e.g. by rebooting or powering down.**

If newer software is available, the terminal will:

- Download this software;
- Install this software
- Reboot the terminal;
- Logon to the network again.

3.2.2 No Satellite Connection

Make sure your computer is able to receive an IP address via DHCP, by following the procedure in Appendix B – Checking and Changing your IP Settings.

When the terminal is not linked to the satellite network, after three minutes, the computer will automatically receive its IP address, via DHCP, from the IPmodem and you will then be able to browse the web interface:

If no DHCP address is assigned to your terminal: remove the Ethernet cable from your computer, wait a few seconds, and plug the Ethernet cable back into your computer.

- Type the IPmodem's address in the address bar of the browser: 192.168.1.1.

You will be redirected to the Status page of the terminal.

If the problem remains, you need to assign a static IP address to your computer by following the procedure in Appendix B – Checking and Changing your IP Settings.

3.3 Overview Web Interface

3.3.1 General Layout

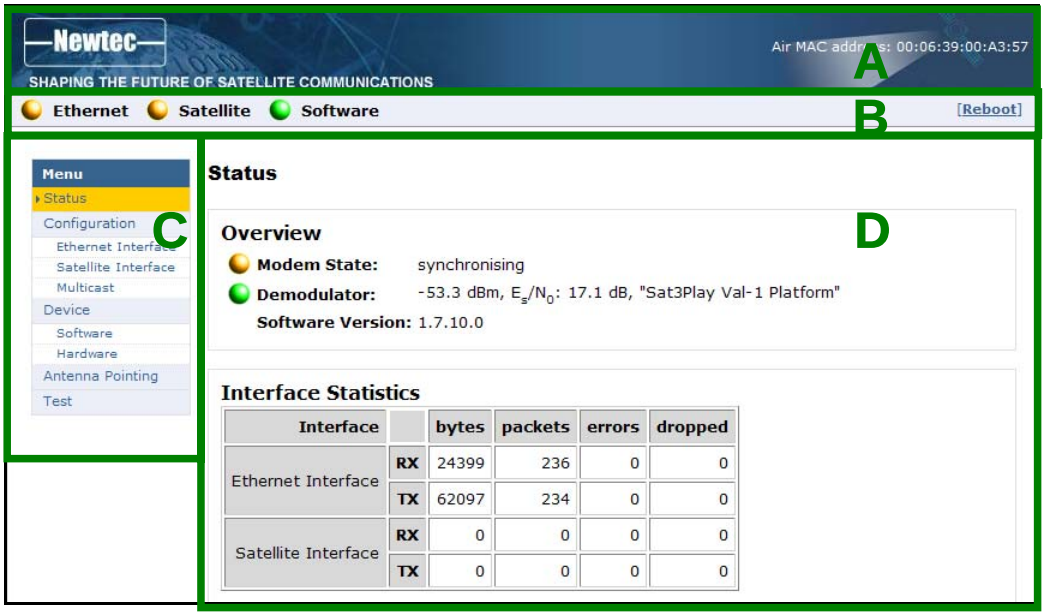


Figure 12 – Page Layout of Web Interface

Each of the web interface pages contains the same elements.

- **A – Banner**

The banner contains the Newtec logo and shows the Air MAC address.

- **B – Status bar**

The status bar always shows the most important status LEDs. This information will be specified in the body of the Status page.

- **C – Menu structure**

On the left hand side of the page the site navigation is found. Click an item to select it. The menu structure may differ depending on your login status.

- **D – Body**

The actual content of the web interface is shown in the body. It always shows the page title and one or more content blocks or forms.

3.3.2 Menu Structure

The menu structure of the web interface of the web interface is described below (see Figure 13).

- **Status**

Check on the device and network status.

- **Configuration**
  - **Ethernet Interface**
    Check and alter the Ethernet interface configuration.
  - **Satellite Interface**
    Check and alter the Satellite interface configuration.
  - **Multicast**
    Check and alter the Multicast configuration.
- **Device Interface**
  - **Software**
    Check on or alter the software version.
  - **Hardware**
    Check the Hardware version.
- **Antenna Pointing**
  - Repoint your antenna
- **Test**
  Run tests on the device.

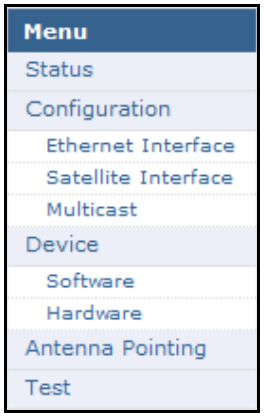


Figure 13 - Menu Structure for the User

3.4 Reboot the IPmodem

See section 2.1.1 for similarities with the hardware button reboot.

Figure 14 – Location of the Reboot Link

➢ Click the [Reboot] link at the right of the status bar to reboot the terminal.

The terminal will reboot and return to the Status page. This may take up to one minute, including satellite link initialisation.

The reboot of the terminal is needed when a (re)configuration has been performed. Changes may not take effect until after the next reboot

3.5 LEDs in the Status Bar

3.5.1 Ethernet LED

The **Ethernet** LED gives the general status of the Ethernet connection to the IPmodem.

LED colour code	Description
Red	Connection is not OK.
Yellow	Connection is OK, but no DHCP address is given.
Green	A DHCP address is given and the connection is OK.

Table 4 - Status LEDs > Ethernet

3.5.2 Satellite LED

The **Satellite** LED gives the general status of the Satellite connection to the IPmodem.

LED colour code	Description
Red	No connectivity, no valid signal received.

LED colour code	Description
Yellow	A valid signal was received. The terminal is busy logging in on the satellite network.
Green	The system is operational and the user is logged in on the satellite network.

Table 5 - Status LEDs > Satellite

3.5.3 Software LED

The **Software** LED gives the general status of the installed software or the updates.

LED colour code	Description
Red	The terminal has a newer software version than the running software version, and The newer software version was not selected because the software validation process failed. See Appendix C – Troubleshooting Guide for possible actions and follow-up.
Yellow	The terminal is retrieving new software via satellite. This can take up to 10 minutes.
Green	No problem. The terminal is running with the latest software version.

Table 6 - Status LEDs > Software

3.6 Status Page

3.6.1 Introduction

In normal operation, when the terminal is pointed and active, there two parts to the Status Page as shown in Figure 15, which are described in more detail in the following sections:

- Overview:
  This part gives an overview of the IPmodem, demodulator and software state.
- Interface Statistics:
  This part gives an overview of the IP modem statistics.

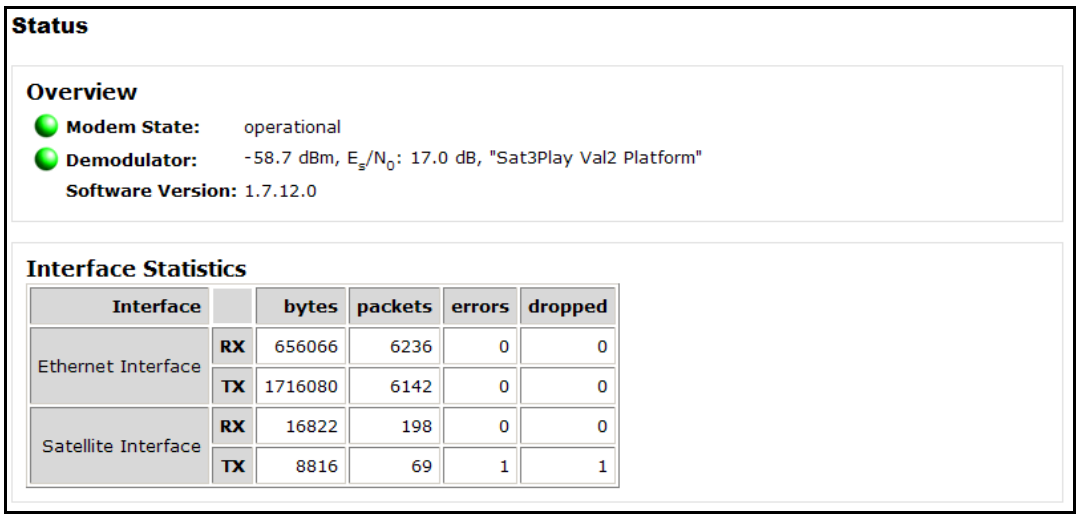

Status
Overview
Modem State: operational
Demodulator: -58.7 dBm, Es/N0: 17.0 dB, "Sat3Play Val2 Platform"
Software Version: 1.7.12.0
Interface Statistics
Interface | | bytes | packets | errors | dropped
Ethernet Interface | RX | 656066 | 6236 | 0 | 0
TX | 1716080 | 6142 | 0 | 0
Satellite Interface | RX | 16822 | 198 | 0 | 0
TX | 8816 | 69 | 1 | 1

Figure 15 – Status Page when the Terminal is Pointed

When the terminal is not yet pointed a third part is shown:

- Pointing:
  This part gives an overview of the pointing status and pointing carrier selection.

3.6.2 Overview

3.6.2.1 Modem State

The IPmodem state is indicated by a coloured LED and a state description. For the LED colour code, refer to Table 7. The possible modem state descriptions are given below.

Modem state	Description
Awaiting installer action	The terminal is waiting for an action of the installer.
Satellite network lookup	The terminal is looking for the satellite network.
Synchronising	The terminal found the satellite network and time synchronisation.
Synchronised	The terminal is synchronised and can directly log in on the satellite network when IP traffic is received via the Ethernet interface.
Network login	The terminal is trying to log in on the satellite network.
Operational	The terminal is logged in.

Table 7 - Status Page > Modem State

3.6.2.2 Demodulator

The Demodulator state is indicated by a coloured LED and a state description.

LED colour code	Description
Green	The demodulator is locked.
Red	The demodulator is not locked.

Table 8 - Status Page > Demodulator LED

The demodulator state is built as follows (see Table 9 for more details):

- *-95.0 dBM, Es/No: 23.2 dB, <Satellite network name>*

Demodulator label value	Description
y dBm	Indication of the received signal strength expressed in dBm. This indication can change when going from pointing mode to operational mode.
Es/No	Es/No is an indication of the received signal quality expressed in dB. This indication can change when going from pointing mode to operational mode.

Table 9 - Status Page > Demodulator Labels

3.6.2.3 Info by Error State

An error message can be displayed. This error message displays the current error status and will be reset when the terminal has entered the satellite network and the terminal is operational.

Please refer to Appendix C – Troubleshooting Guide for more details on possible errors and actions needed to resolve the occurring error

3.6.2.4 Software Version

The running software version is indicated by its version number. See also Appendix C – Troubleshooting Guide.

3.6.2.5 Pointing

This section of the web interface displays information on the pointing status of the terminal.

The following status can be viewed:

- Status when the antenna is not pointed as shown in Figure 16, giving the option to start pointing or to skip pointing. Where two pointing carriers are available,

one can choose the used carrier as shown in Figure 17.

- Status during the pointing of the antenna; see Figure 18. Click on Pointing Completed when the antenna is pointed;
- Status when pointed successfully or pointing skipped as shown in Figure 19. This is the status during normal operation of the terminal after pointing;

For more details about the functioning of these buttons and navigation between screens refer to the Point&Play manual.

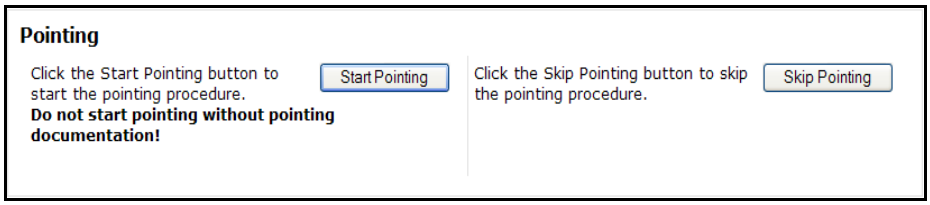

Pointing
Click the Start Pointing button to start the pointing procedure.
Do not start pointing without pointing documentation!
Start Pointing
Click the Skip Pointing button to skip the pointing procedure.
Skip Pointing

Figure 16 - Web Interface > Status when not Pointed – One pointing Carrier

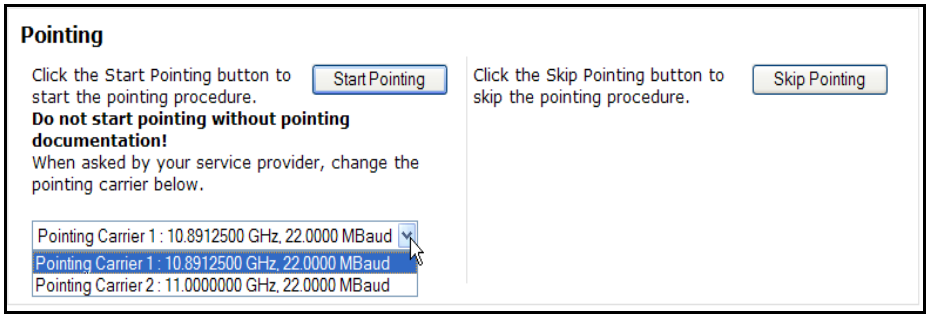

Pointing
Click the Start Pointing button to start the pointing procedure.
Do not start pointing without pointing documentation!
When asked by your service provider, change the pointing carrier below.
Start Pointing
Click the Skip Pointing button to skip the pointing procedure.
Skip Pointing
Pointing Carrier 1 : 10.8912500 GHz, 22.0000 MBaud
Pointing Carrier 1 : 10.8912500 GHz, 22.0000 MBaud
Pointing Carrier 2 : 11.0000000 GHz, 22.0000 MBaud

Figure 17 - Web Interface > Status when not Pointed – Two pointing Carriers

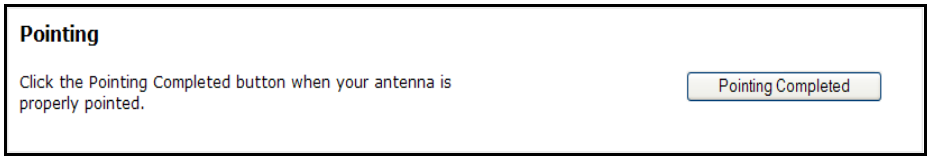


Figure 18 - Web Interface > Pointing

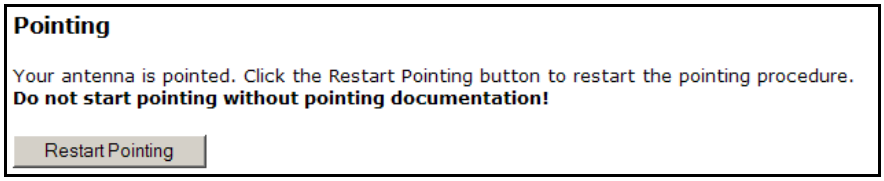

Pointing
Your antenna is pointed. Click the Restart Pointing button to restart the pointing procedure.
Do not start pointing without pointing documentation!
Restart Pointing

Figure 19 - Web Interface > Antenna Pointing > Status when Pointed or Pointing is Skipped

During normal operation the Restart Pointing button is shown via the Antenna Pointing button in the menu bar and should only be used in case pointing documentation is available and the antenna must be re-pointed

3.6.3 Interface Statistics

Modem state		Description
Interfaces	Ethernet interface	User side interface (Ethernet frames)
	Satellite interface	Satellite side interface (IP packets)
Directions	Rx	Receive
	Tx	Transmit
Statistics	Bytes	Total number of received (or transmitted) bytes
	Packets	Received (or transmitted) Ethernet frames or IP packets
	Errors	Number of occurred errors
	Dropped	Dropped Ethernet frames or IP packets

Table 10 - Status Page > Interface Statistics

3.7 Configuration

The reboot of the terminal is needed when a (re)configuration has been performed. Changes may not take effect until after the next reboot.

3.7.1 Ethernet Interface

This section describes the interface between the computer and the IPmodem.

3.7.1.1 View the Ethernet Interface Configuration

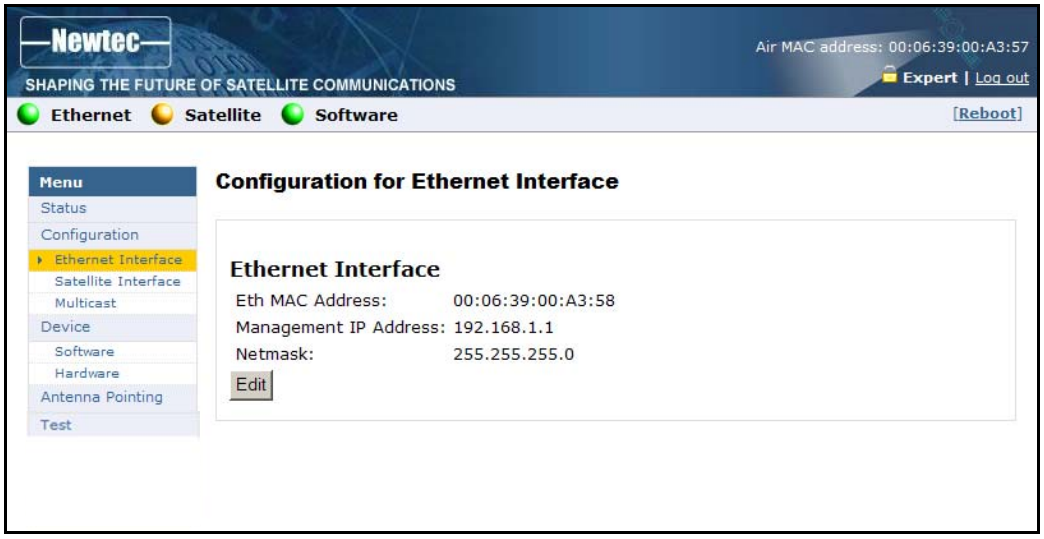


Figure 20 - Web Interface > View Configuration Ethernet Interface

3.7.1.2 The Parameters of the Ethernet Interface

The displayed parameters and their description are shown below.

Parameter	Description
Eth MAC address	MAC address of the Ethernet interface
Management IP address	Management IP address of the Ethernet interface
Netmask	Network range for the user's LAN

Table 11 - Configuration Page > Ethernet Interface Parameters

3.7.1.3 Modify the Ethernet Interface Configuration

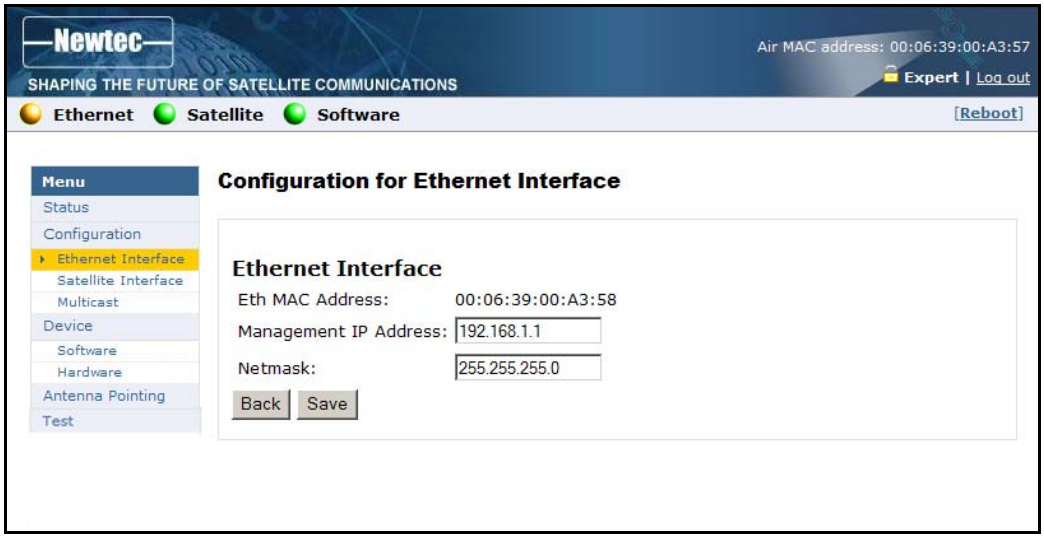


Figure 21 - Web Interface > Edit Configuration Ethernet Interface

- Click on Edit in the Web Interface > View Configuration Ethernet interface (Figure 21) to change the Ethernet Settings.
- Edit the parameters to be changed.
- Click on Save in the Web Interface > Edit Configuration Ethernet interface (Figure 21) to save the new settings.

The Ethernet interface configuration is now saved!

3.7.2 Satellite Interface

These settings may only be changed upon advice of your internet service provider!

3.7.2.1 Introduction

This section describes the interface settings between the terminal and the satellite.

Every satellite interface setting consists of:

Initial Receive Carrier

This is the initial receive carrier via which the IPmodem will try to gain access to the network.

Pointing Carrier

This carrier is needed to enable antenna pointing via the Point&Play mechanism. When two different pointing carriers are assigned to the terminal, the installer can perform his pointing on two different pointing carriers. At least one pointing carrier must be enabled.

3.7.2.2 View the Satellite Interface Configuration

Maximum two initial receive carrier settings and pointing carrier settings can be assigned and displayed. Only the settings that are enabled are displayed. How to change the satellite interface configuration is described in section 3.7.2.3.

If two settings for a carrier are enabled and displayed, the preferred initial receive carrier is marked by ✓.

If two settings for a carrier are enabled and displayed, the default pointing carrier is marked by ✓ The final selection of the pointing carrier that is used for pointing is done in the Status Page as shown in Figure 17, where the non-default pointing carrier can be selected.

In the example of Figure 22, two initial receive carriers and two pointing carriers are enabled. Initial Receive Carrier 1 is marked as preferred, and Pointing Carrier 2 is set as default.

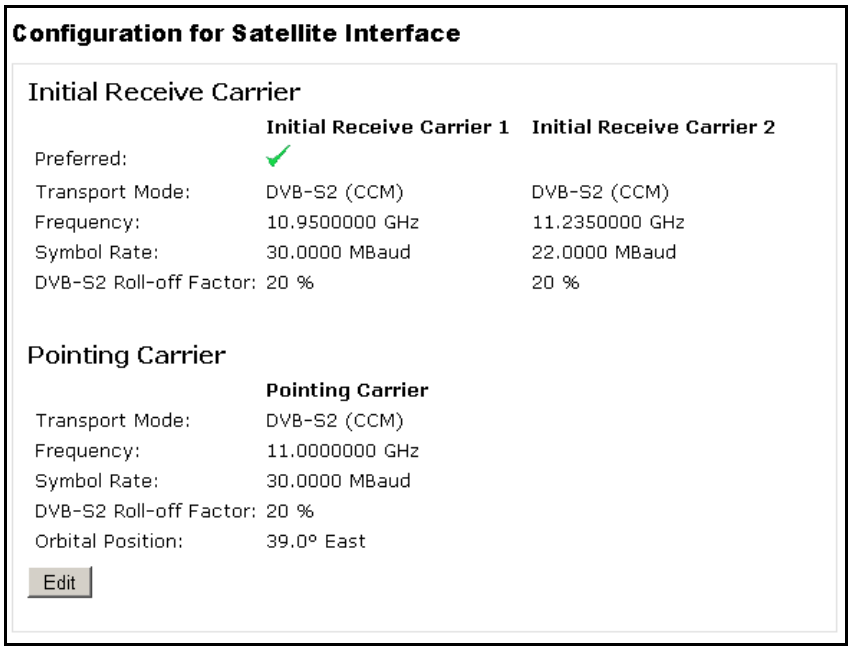


Figure 22 - Web Interface > View Configuration Satellite Interface

3.7.2.3 The Parameters of the Satellite Interface

The displayed parameters and their descriptions are shown in the table below.

Parameter	Description
Initial Receive Carrier	
Preferred	Mark for the preferred Initial Receive Carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
DVB-S2 Roll-off Factor	Only configurable in DVB-S2 mode. Excess bandwidth of the Rx signal spectrum. 35 %; 25 %; 20 %.
Pointing Carrier	
Default	Mark for the default pointing carrier
Transport Mode	DVB-S; DVB-S2 (Constant Coding Modulation - CCM).
Frequency	Initial receive frequency (GHz)
Symbol Rate	Initial receive symbol rate (Mbaud)
DVB-S2 Roll-off Factor	Only configurable in DVB-S2 mode. Shape of the Rx signal spectrum. 35 %; 25 %; 20 %.
Orbital Position	Orbital position of the satellite in degrees and East/West selection.

Table 12 - Configuration Page > Satellite Interface Parameters > Initial Receive Carrier

3.7.2.4 Edit the Satellite Interface Configuration

- Click on Edit in the Web Interface > View Satellite Configuration Interface as shown in Figure 22.
- Edit the parameters to be changed and as described in Figure 23.

An initial receive carrier setting or pointing carrier setting can only be enabled if the frequency of the configuration is filled in

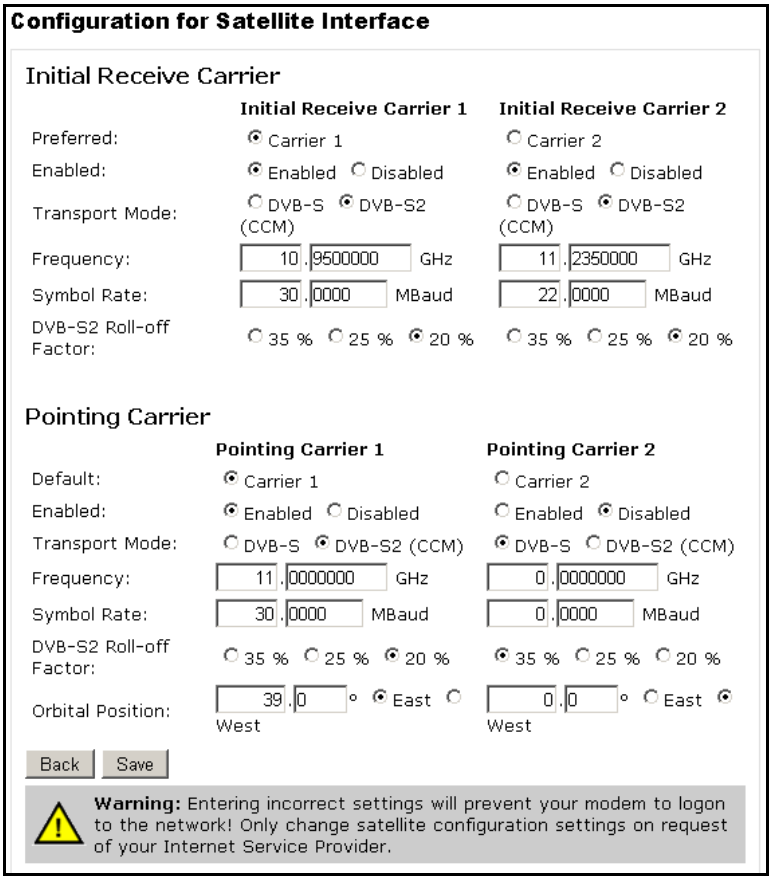


Figure 23 - Web Interface > Edit Configuration Satellite Interface

- Click on Save in the Web Interface > Edit Configuration Ethernet interface (Figure 23) to save the new settings;

The satellite interface configuration is now saved and the changes in the configuration are displayed.

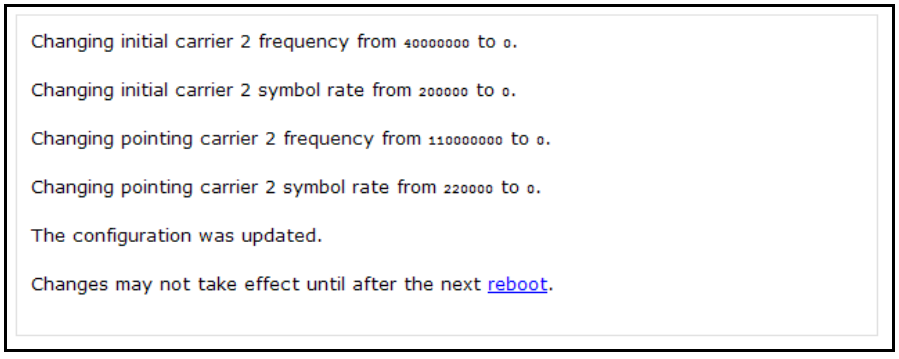

Changing initial carrier 2 frequency from 40000000 to 0.
Changing initial carrier 2 symbol rate from 200000 to 0.
Changing pointing carrier 2 frequency from 110000000 to 0.
Changing pointing carrier 2 symbol rate from 220000 to 0.
The configuration was updated.
Changes may not take effect until after the next reboot.

Figure 24 – Example of Satellite Interface Configuration Changes

- Click on **reboot** at the bottom of the page;
- Click on **Normal Reboot** to confirm and execute the reboot;

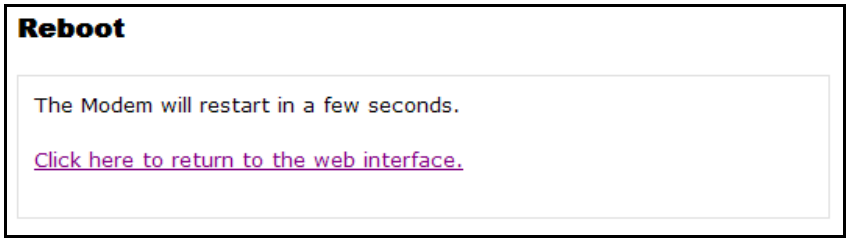


Figure 25 – Reboot in Progress

➢ Click on **Click here to return to the web interface** and wait a few minutes.

The satellite interface configuration is now effective.

3.7.3 Multicast

The satellite can send several sessions to a number of Astra2Connect terminals at the same time.

This is IPmulticasting. There are two configurations possible in the Astra2Connect terminal to receive these programs:

- Static IP addresses: these are IP addresses where the sessions are received. You will be provided with these addresses if needed;
- IGMP: this is a protocol that lets you receive multicast sessions (maximum 10) without entering specific IP addresses.

3.7.3.1 View the Multicast Configuration

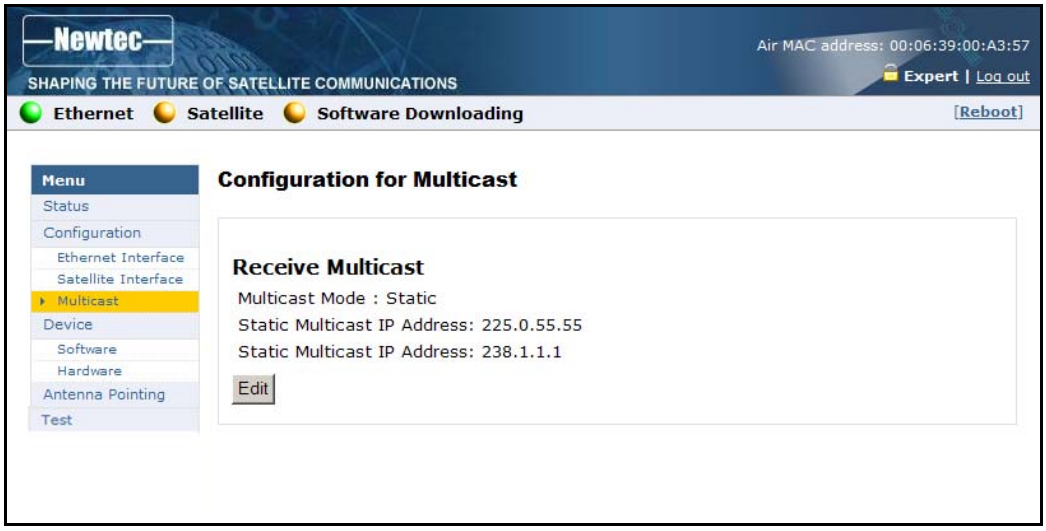


Figure 26 - Web Interface > View Configuration Multicast

3.7.3.2 The Multicast Parameters

The displayed parameters and their description are shown below.

Parameter	Description
Multicast Mode	Disabled: Multicast mode is disabled. Static: The active Multicast Configuration is based on entered Static Multicast IP Addresses. IGMP Dynamic: Dynamic IGMP multicast mode.
Static Multicast IP Address 1-10	Maximum 10 multicast IP Addresses can be assigned and active in case of Static Multicast Mode.

Table 13- Configuration Page > Multicast parameters

3.7.3.3 Edit the Multicast Configuration

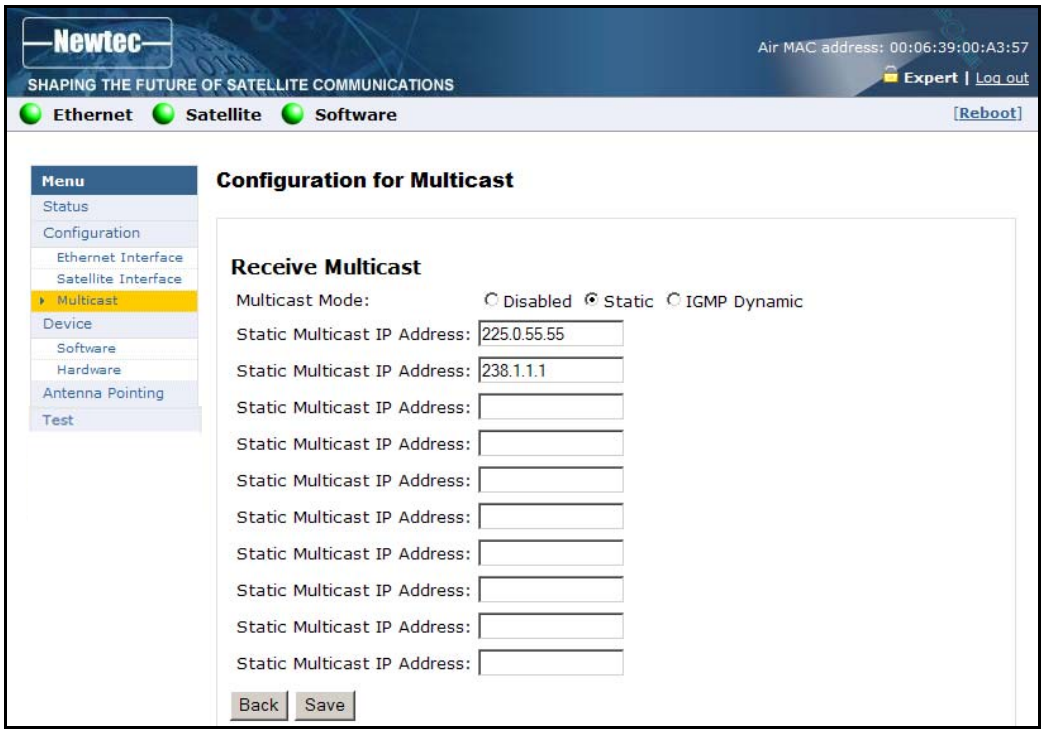


Figure 27 – Web Interface > Edit Multicast Configuration

- Click on Edit in the Web Interface > View Multicast configuration (Figure 26) to Change the Ethernet Settings;
- Edit the parameters to be changed;
- Click on Save in the Web Interface > Edit Multicast configuration (Figure 27) to save the new settings.

The Multicast configuration is now saved!

The response screen for a Disabled Multicast configuration:

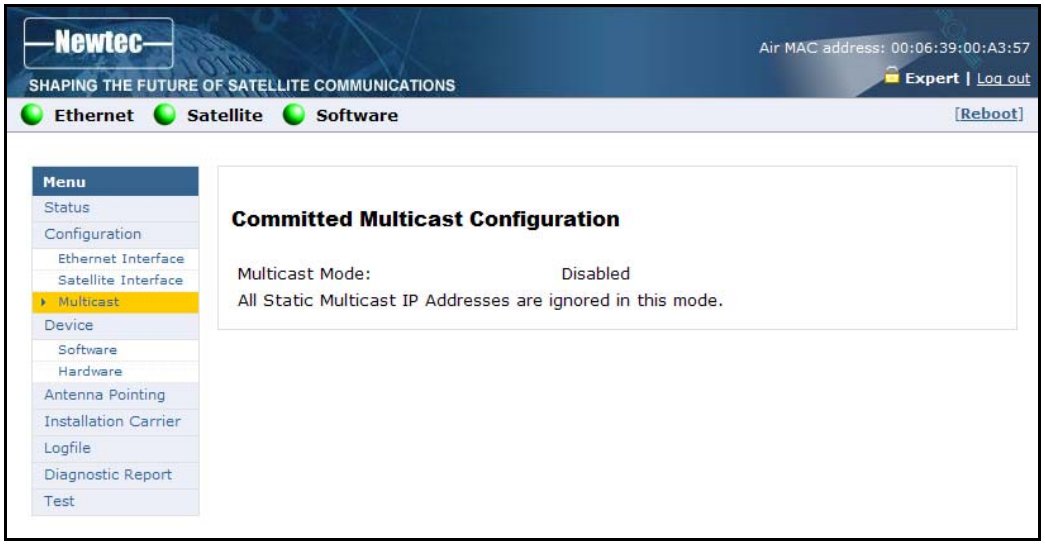


Figure 28 – Web Interface > Confirmation of Disabled Multicast Configuration

In case an invalid multicast IP address is replacing a valid multicast IP address, the last valid multicast IP address will still be in use.

The response screen for a Committed Multicast configuration:

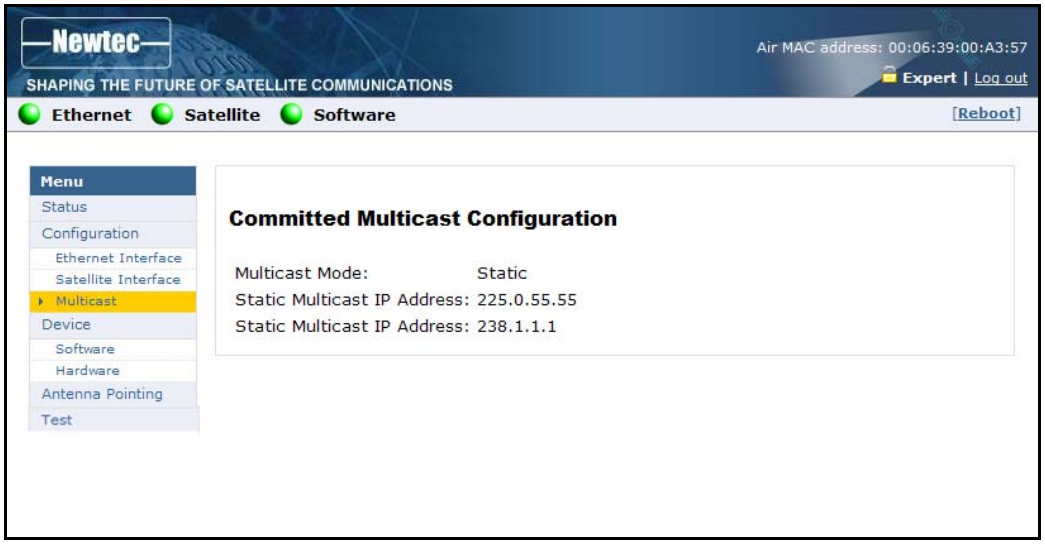


Figure 29 – Web Interface > Confirmation Committed Multicast Configuration

3.8 Device

3.8.1 Software

3.8.1.1 Introduction – General Case

The terminal software is automatically upgraded over the satellite without any user interaction. In general, the only requirement for an upgrade to be successful is for the terminal to have satellite connectivity during the time of upgrade.

To allow a secure terminal software upgrade mechanism, the flash of the modem can contain two different software versions. A newly installed software version has to pass an automatic software validation procedure. After a software upgrade, the IPmodem is automatically reset.

Figure 30 - Web Interface > View Software Configuration

Table 14 gives a description of the parameters in the Software menu:

Parameter	Description
Software Download Identifiers To uniquely identify the terminal variant for software download triggered from the hub side, the following keys are reserved for SW update.	
Software Download Manufacturer ID	Software download manufacturer Identifier (639 for Newtec devices)
Software Download Hardware ID	Software downloads hardware Identifier.
Software version	
Currently Running Software Version	The currently installed software version is displayed. When an alternate software version is available, you will

Parameter	Description
	be provided with a link Try Alternate Version.
Alternate Software Version	Only displayed when an alternative software version is present.

Table 14 - Software Page

3.8.1.2 Software Upgrade

A newly installed software version must pass an automatic software validation procedure. When this software validation process fails, the old software version remains in use. The passive bank now contains a newer software version that did not pass the validation process. In this case, the user has the possibility to re-trigger the validation process. This situation can occur when a user turns off his IPmodem during the validation process or when satellite connectivity was not possible to establish during the validation process.

It is possible that the terminal performs a **software update** during the first logon. This process can take **up to ten minutes**. You may **NOT interrupt** the terminal yourself during this period by e.g. rebooting or powering down

Figure 31 - Web Interface > Software (Alternate Version)

To re-trigger the validation process:

- Click the link **Try Alternate Version**;

The *Software Upgrade page* will be displayed indicating the new software version number (see below).

- If the web interface doesn't refresh automatically, navigate back to the *Status page*.

A total reboot, including satellite link initialisation might take up to 1 minute.

Figure 32 - Web Interface > Software Upgrade Confirmation

When a newer version is present and validation fails, the software LED is red.
Also read section 3.5 for more information on the meaning of the software status LEDs

3.8.2 Hardware

Figure 33 - Web Interface > Hardware

Below are given the displayed parameters and their description.

These values are read only.

Parameter	Description
Device	
Hardware ID	Hardware identifier of the modem
Hardware Version	Hardware version number of the modem

Table 15 - Configuration Page > View Hardware Parameters

3.9 Antenna Pointing

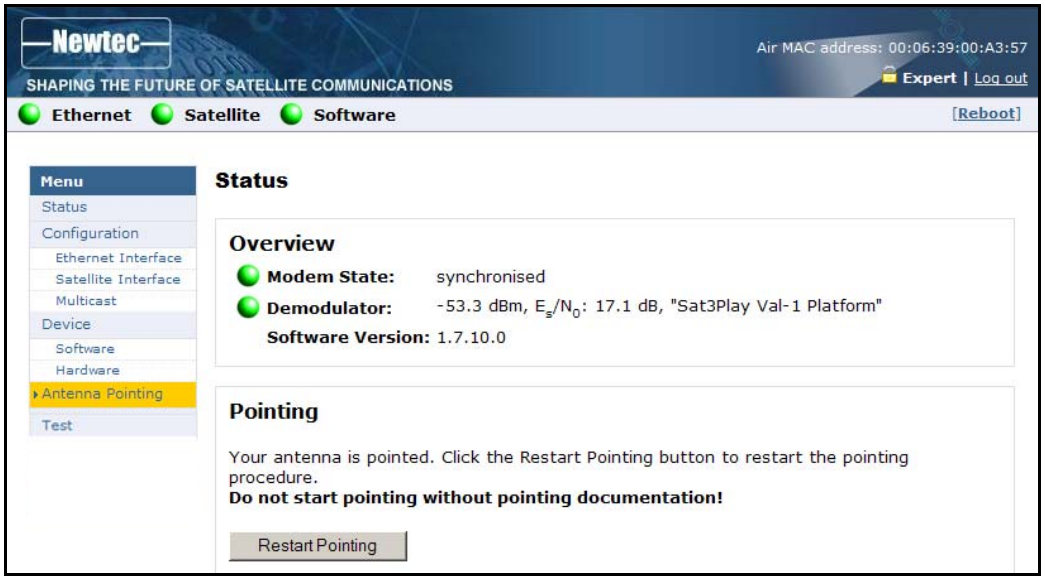


Figure 34 – Antenna Pointing

In case the antenna should be re-pointed click the Restart Pointing button.

The pointing procedure is described in the Point&Play Manual.

The GUI interface is described in paragraph 3.6.2.5.

3.10 Test

To view the functioning status of the Astra2Connect Terminal, or to identify problems that may occur, tests can be run on the terminal:

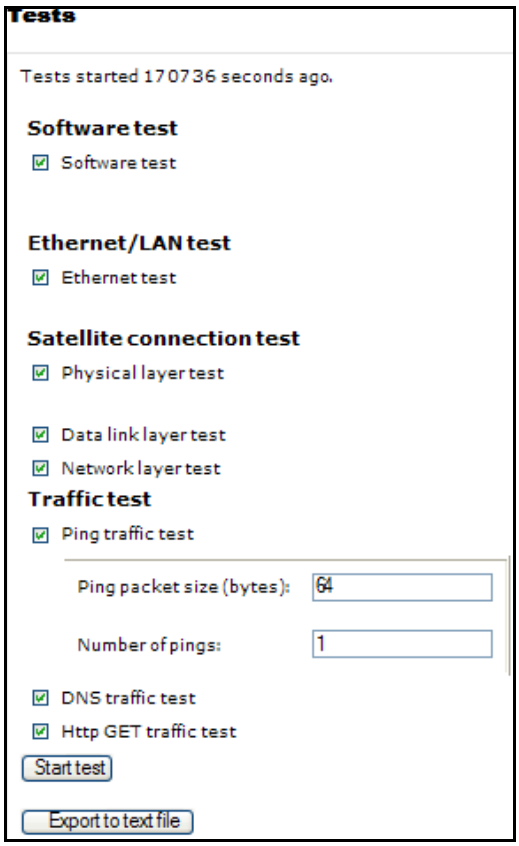


Figure 35 – Web Interface > Test Overview

Mark (☑) or unmark (☐) a test depending on the tests to be run.

Section 3.10.3 gives a description of the tests which can be performed.

Click on the Start test -button to begin the test.

3.10.1 On Screen Test Results

As a result, a screen with the requested test results will be shown, see Table 16 – Possible States of IPmodem Tests.

Running test	
Test waiting to run	
Successfully ran test	
Unsuccessfully ran test	

Table 16 – Possible States of IPmodem Tests

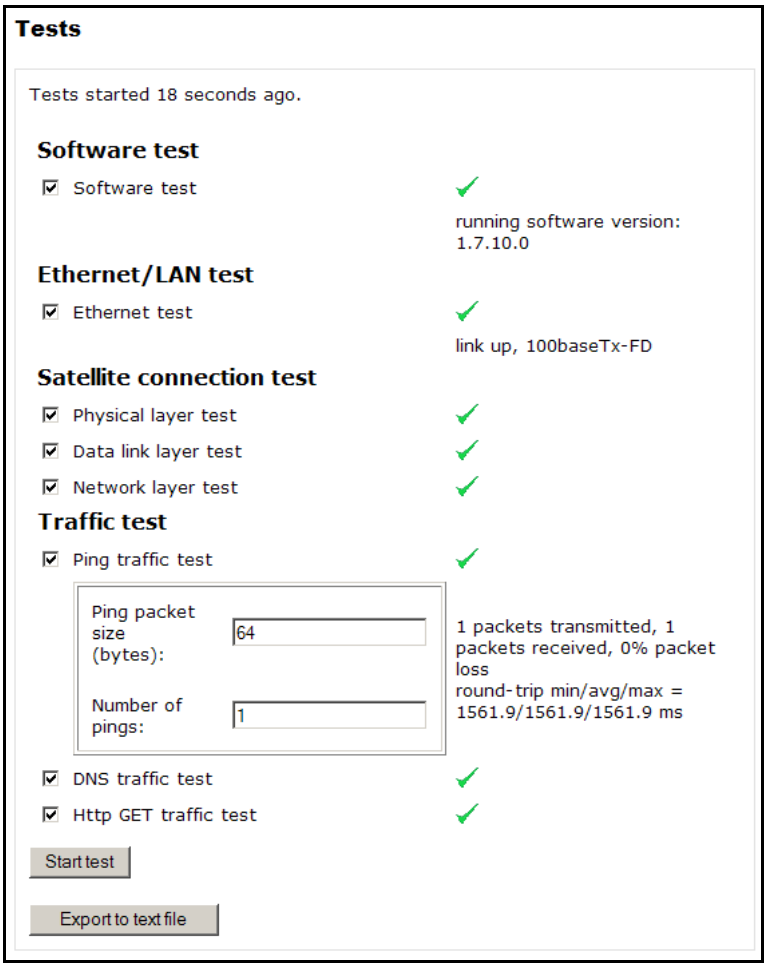


Figure 36 – On-Screen Test Results

3.10.2 Filed Test Results

Click on the Export to text file -button to begin the test. As a result, a web page with the test results in text format will be provided. The test results can now be saved in a text file from the browser, as shown in Figure 37.

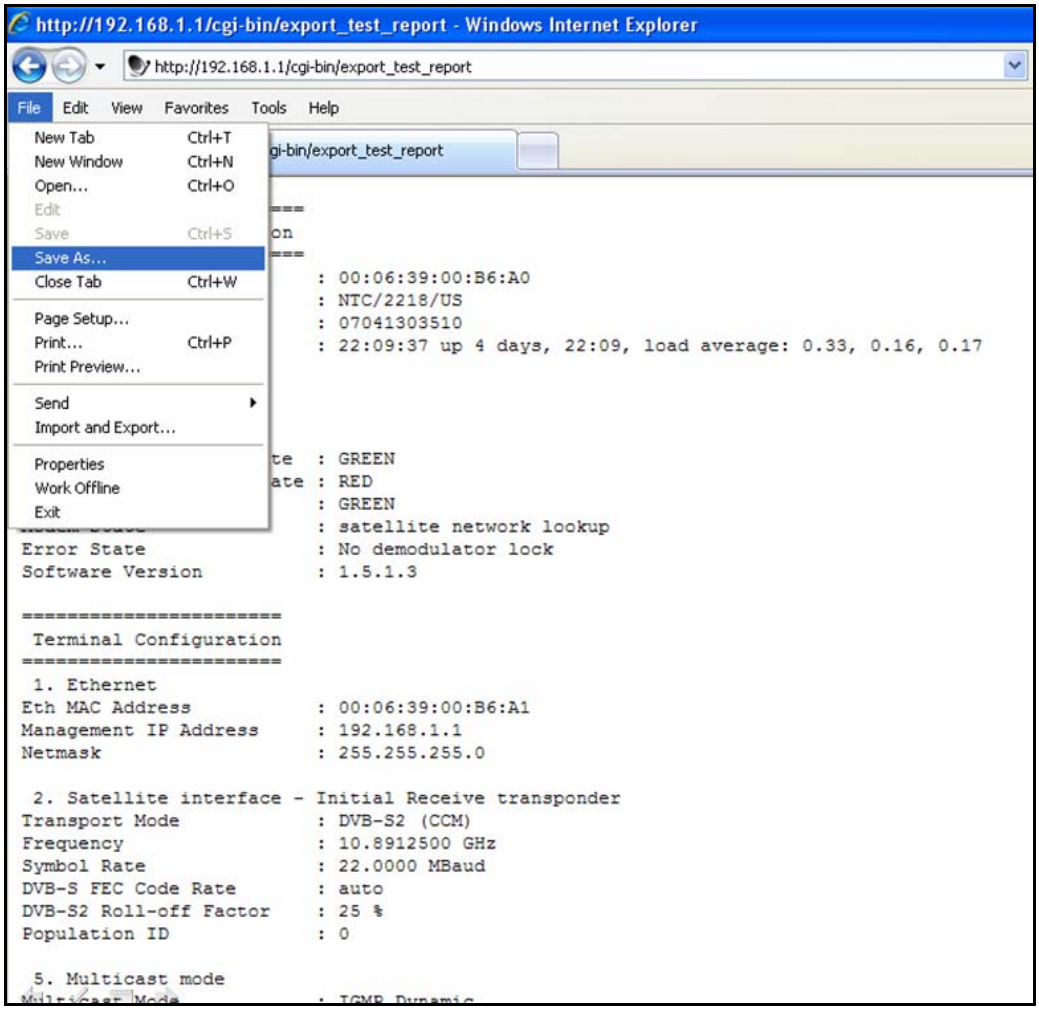


Figure 37 – Web Interface > Test > Export to Text File

3.10.3 Test Descriptions

This section provides an overview of the tests that can be run on the IPmodem.

3.10.3.1 Software Test

The Software test verifies the validity of the software.

3.10.3.2 Ethernet/LAN Test

The Ethernet/LAN exists of three tasks:

- Checking the Ethernet physical layer;
- Obtaining the IP address off the computer connected to the IPmodem;
- Checking the IP address of the computer, provided via DHCP by the IPmodem.

3.10.3.3 Satellite Connection Test

The Satellite connection test is composed of three tests:

- The Physical layer test, checks if the physical layer of the IPmodem – satellite connection is able to receive data;
- The Data link layer test, checks if the Astra2Connect system is able to send data to the satellite;
- The Network layer test, checks the IP connection.

3.10.3.4 Traffic Test

The Traffic test is composed of three tests:

- A ping traffic test, tests if ping packets can be transported over the network from the IPmodem, over the satellite to the hub site.
  The following fields can be filled in:
  - Ping packet size (bytes): minimum 1 and maximum 65,507 bytes;
  - Number of pings: minimum 1 and maximum 100.
- The DNS traffic test resolves a URL via a name server at the hub site.

The Http GET traffic test, verifies the TCP acceleration and pre-fetching.

4 APPENDIX A – LOCAL NETWORK CONFIGURATION

The following provides an overview of IP network configurations. The situation is explained for connecting a single computer to the IPmodem or for connecting a router with its own LAN to the IPmodem.

To correctly interpret the figures, keep in mind the following convention:

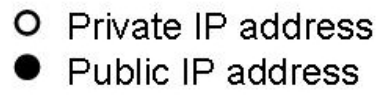


Figure 38 - Network Configuration Legend

4.1 Connect a Single Computer to the IPmodem

Once the computer is connected to the IPmodem's Ethernet interface, set the computer's IP settings to **DHCP enable**.

Please refer to section 5 for a detailed explanation on how to change the IP settings

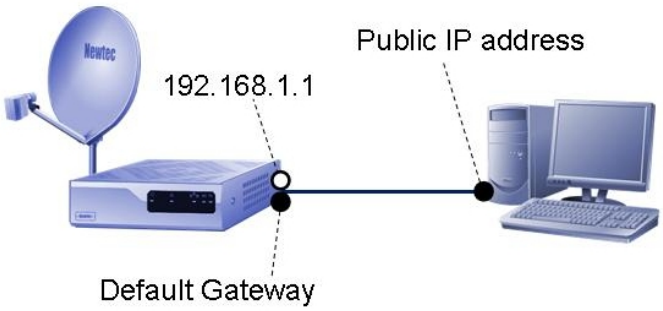


Figure 39 - CPE Network Configuration > Single Computer

The IPmodem web interface can be reached on:

- 192.168.1.1 (default web interface address);
- The Default Gateway address.

We recommend using a Software fire-wall on the computer which is connected to the IPmodem.
To know the Default Gateway address, type the **`ipconfig`** command in the command line interface

4.2 Connect a LAN to the IPmodem

To connect the IPmodem to a network, a router is needed. The IPmodem has to be connected to the Internet/WAN interface of the router. In the router configuration, the Internet/WAN interface must be set to DHCP mode. Please refer to the router's manual for a description of how to set the Internet interface to DHCP mode and how to connect the router to your LAN (local area network).

Please refer to section 5 for a detailed explanation on how to change the IP settings

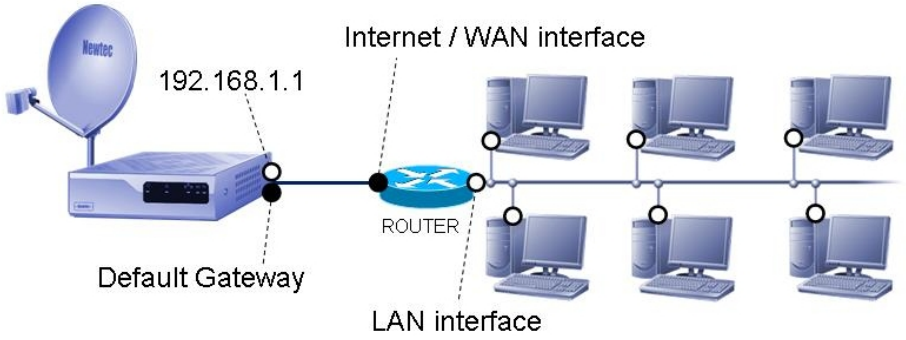


Figure 40 - Network Configuration > LAN

The IPmodem web interface is accessible through the IPmodem default gateway. The IPmodem default gateway address can be looked up through the router's web interface.

Please refer to your router's manual for a description of how to look up the default gateway address.

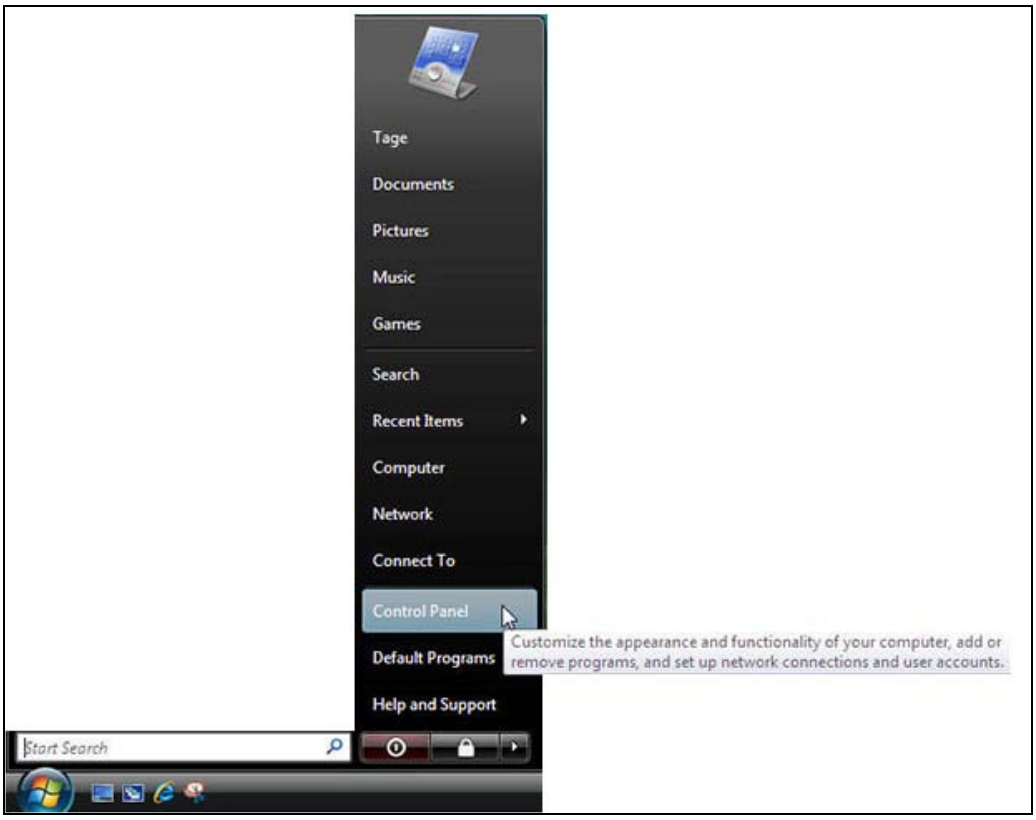
5 APPENDIX B – CHECKING AND CHANGING YOUR IP SETTINGS

5.1 Introduction

The following sections describe how to check if your computer is able to receive an IP address via DHCP. The sections also describe how to change your IP settings to enable your computer to accept an IP address assigned by the IP modem.

5.2 Windows Vista

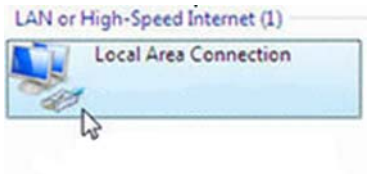
- Open the Start Menu and select Control Panel;



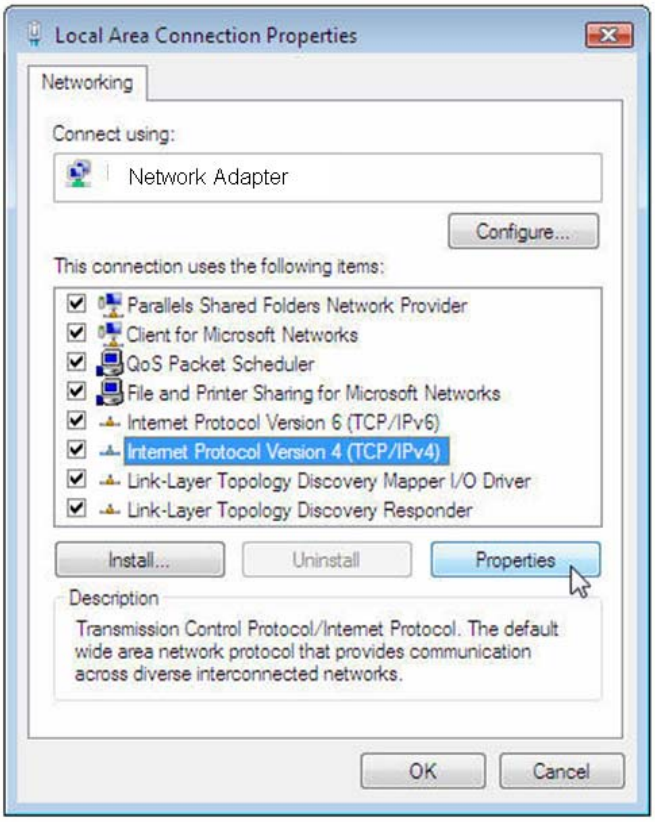
- Select the option View network status and tasks;

- Select Manage network Connections;

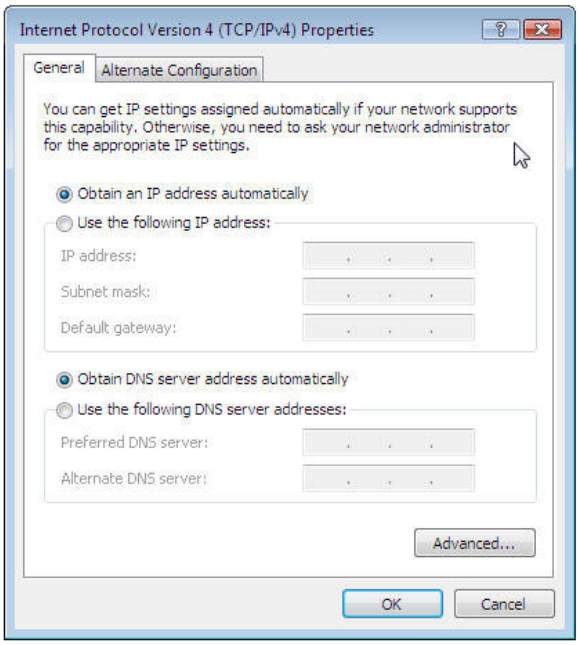
- Double click on Local Area Connection;



- Select the button **Properties** at the bottom;
- Select **Internet Protocol Version 4 (TCP/IPv4)**;



- Select Properties;
- Make sure “Obtain an IP address automatically’ and Obtain DNS server address automatically are selected;

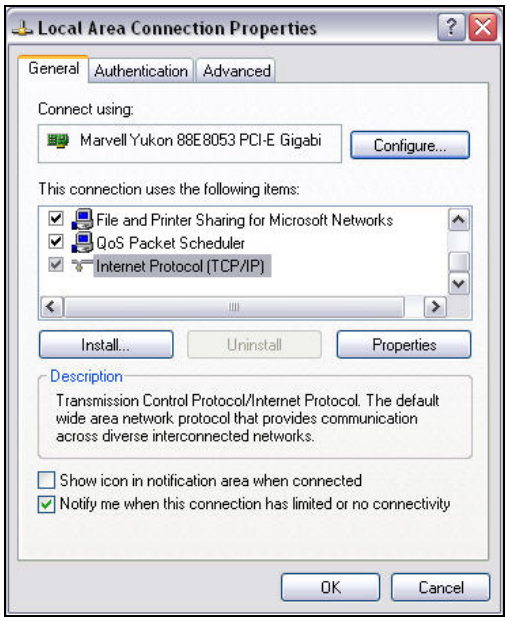

Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

- Click the **OK** button.

5.3 Windows XP

- Open the Start Menu and select Control Panel;
- Open the Network Connections window;

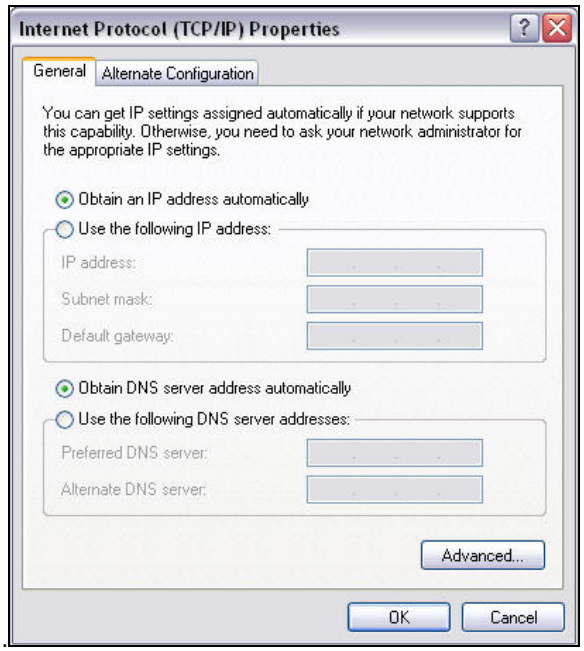
- Right click on the active LAN connection and select Properties;
  The Local Area Connections Properties dialogue will open.



- Select the tab **General**;
- Scroll down the items and select **Internet Protocol (TCP/IP)**;
- Click the **Properties** button;

  The **Internet Protocol (TCP/IP) Properties dialogue** will open.

  By default, the dialogue is set as shown below


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

- Select the tab **General**;

If the radio button **Obtain an IP address automatically** is selected, your computer is able to receive an IP address.

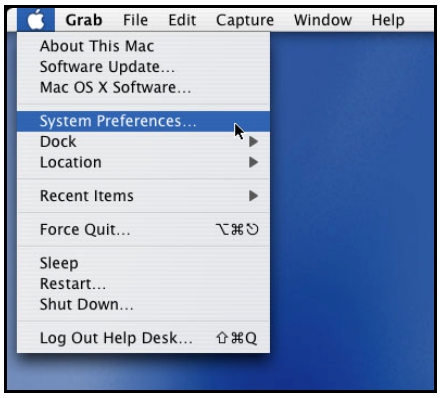
If the radio button **Obtain an IP address automatically** is not selected:

- Select the radio button Obtain an IP address automatically;
- Click the OK button.

Your computer will now be able to accept an IP address from the IP modem.

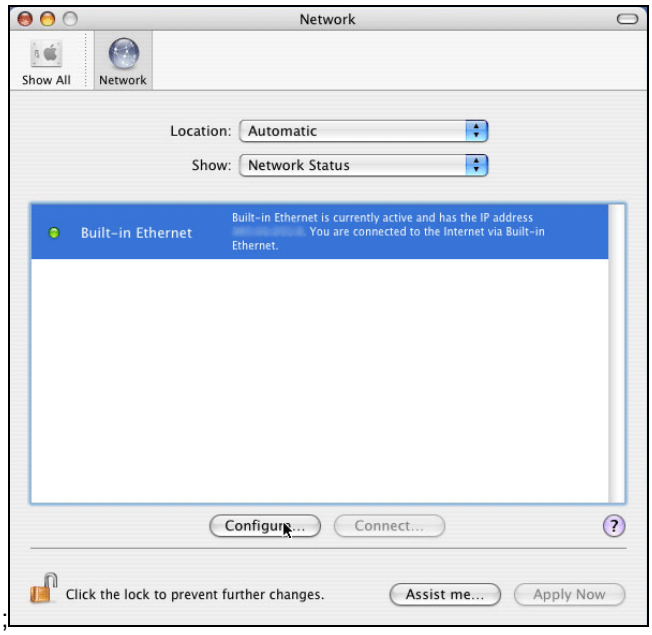
5.4 Mac OS X

- Click on your **Apple** menu and choose **System Preferences**:

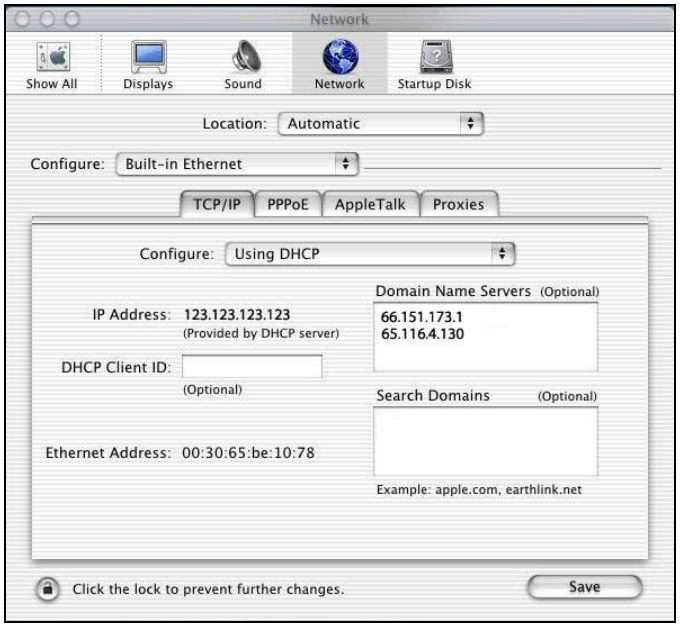


- Double-click on the **Network** icon;

- Click on the adapter that you wish to change (usually *Built-in Ethernet*) and then click the **Configure...** button



- Go to the **TCP/IP** tab. If your computer is configured to use a dynamic IP address, you should see a screen such as the one below (notice **Using DHCP** in the drop-down box next to **Configure**);



- This is where you can change your DNS settings, by entering the appropriate DNS servers in the **Domain Name Servers (Optional)** box;
- If not already selected, select **Using DHCP** from the drop down box called **Configure** in the **TCP/IP** tab. You should get a screen shot as above;
- Apply your settings by clicking the **Save** button.

6 APPENDIX C – TROUBLESHOOTING GUIDE

We would appreciate any useful feedback that can help us to complete this section. The position of the LEDs described in the Problem indication column is described in section 3.4.

Problem indication	Possible solution
No connectivity with IPmodem web interface. LED error indication: **The Rx indicator LED is off** **The Warning LED is orange**	The IPmodem has no connectivity with the satellite network (section 3.2.2). Check if the computer can receive an IP address via DHCP, as described in Sectrion 5. If the computer can receive an IP address: unplug the Ethernet cable from your computer, wait for more than 3 minutes and plug the Ethernet cable in, again.
Web interface error info: **Modem State :** **Awaiting installer action** **Modem LED is red**	Your modem has not been pointed. Consult the Point&Play manual to execute the pointing process.
Web interface error info: **Modem State : antenna pointing**	Your modem is currently in the pointing state. Consult the Point&Play manual to execute the pointing process.
Web interface error info: **No demodulator lock** **Modem LED is red** LED error indication: **The RX indicator LED is off**	Error in handling of the Rx signal. The Rx demodulator cannot lock. Verify the pointing of the antenna. Verify the connectivity between the IPmodem and the antenna. Verify the configuration of the satellite interface: frequency, polarisation, symbol rate…
Web interface error info: **Terminal specific forward carrier lookup is ongoing** LED error indication: **Warning LED is on, RX LED is on**	The modem is determining on which traffic carrier it is provisioned. If the message does not disappear within 10 minutes, reset the modem (section 3.4). If the error is still occurring after a number of hours, contact your ISP : - to report the problem; - to check if your IPmodem is provisioned in the network

Problem indication	Possible solution
Error information in the web interface: **Synchronisation process failed** LED error indication: **Warning LED is on, RX LED is on**	The time synchronisation process failed. Reset the IPmodem (section 3.4). Contact your ISP if this error is persistent for more than four hours. The error can be an indication of a general network problem
Error information in the web interface: **Synchronisation lost** LED error indication: **Warning LED is on, RX LED is on**	The time synchronisation is lost. Reset the IPmodem (section 3.4). Contact your ISP if this error is persistent for more than four hours. The error can be an indication of a general network problem.
Error information in the web interface: **Network login failed** Error information on the IPmodem: LED error indication: **Warning LED is on, RX LED is on.**	The IP modem could not login to the satellite Verify if the TX cable is correctly connected. If the TX cable is correctly connected and the error is still occurring after a number of hours, contact your ISP : - to report the problem; - to check if your IPmodem is provisioned in the network
Error information in the web interface: **Network Layer configuration failed** LED error indication: **Warning LED is on, RX LED is on**	An error occurred during the configuration of the network layers after a valid satellite network login. Reset the IPmodem (section 3.4). Contact your ISP if this error is persistent for more than four hours.
Error information in the web interface: **TCP acceleration service failed** LED error indication: **Warning LED is on, RX LED is on**	An error is detected in the TCP acceleration service. Reset the IPmodem. Reset the IPmodem (section 3.4) Contact your ISP if this error is persistent for more than four hours.
Error information in the web interface: **Network connectivity lost** LED error indication: **Warning LED is on, RX LED is on**	The connectivity with the satellite network is lost. Reset the IPmodem. Reset the IPmodem (section 3.4) Contact your ISP if this error is persistent for more than four hours.
Error information in the web interface: • **Installation carrier setup failed** LED error indication: • **Warning LED is on, RX LED is on**	The activation of the installation carrier test mode failed because the terminal was not in the correct state.

Table 17 – Troubleshooting Table

7 APPENDIX D – ACRONYMS

Acronym / term	Description
8PSK	8 Phase Shift Keying
AC	Alternating Current
ACS	Access Control Server
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
BER	Bit Error Rate
C/N	Carrier to Noise ration
CCM	Constant Coding Modulation
CE approved	Conformité Européenne (European health & safety product label)
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DVB	Digital Video Broadcasting
DVB-RCS	Digital Video Broadcasting – Return Channel Satellite
DVB-S, DVB-S2	Digital Video Broadcasting over Satellite (2)
EIRP	Effective Isotropic Radiated Power
EN	ETSI Norm
FCT	Frame Composition Table
FEC	Forward Error Correction
FTP	File Transfer Protocol
GMSK	Gaussian Minimum Shift Keying
G/T	Antenna Gain-to-System Noise Temperature Ratio
GUI	Graphical User Interface
HTTP	Hyper Text Transfer Protocol
ICMP	Internet Control Message Protocol
IEEE	Institute of Electrical and Electronics Engineers,
iLNB	Interactive Low Noise Block-down converter
IP	Internet Protocol
ISP	Internet Service Provider
IT	Information Technology

Acronym / term	Description
LAN	Local Area Network
LED	Light Emitting Diode
LNB (iLNB)	Low Noise Block-down converter
MAC address	Medium Access Control
MF-TDMA	Multi Frequency Time Division Multiple Access
MPEG	Moving Picture Experts Group
NCR	Network Clock Reference
NIT	Network Information Table
Nm	Newton metre
ODU	Outdoor Unit
PAT	Program Association Table
PMT	Program Map Table
QPSK	Quadrature Phase Shift Keying
RCS	Return Channel Satellite
RF	Radio Frequency
RFC	Request for Comments
RMT	RCS Map Table
RT	Reporting Tool
Rx	Receive
SAP	Satellite Access Provider
SCT	Superframe Composition Table
SDT	Service Descriptor Table
SEMS	Satellite Earth Station Management System
TBTP	Time Burst Time Plan
TCP (TCP/IP)	Transmission Control Protocol
TCT	Time Composition Table
TMS	Terminal Management System
TS	Transport Stream
Tx	Transfer
UDP	User Datagram Protocol
VAC	Volts, Alternating Current
VSAT	Very Small Aperture Terminal
WCT	Waveform Composition Table

Table 18 - Acronyms

8 APPENDIX E – SPECIFICATIONS

8.1 IPmodem (indoor unit)

Forward Channel

- Modulation/coding
  - DVB-S
  - Rate 1/2, 2/3, 3/4, 5/6, 7/8 (QPSK)
  - DVB-S2 CCM
  - Rate 1/2, 2/3, 3/4, 5/6, 7/8 (8PSK)
  - Rate 1/2, 2/3, 3/4, 5/6, 7/8 (QPSK)
- Symbol rate
  - DVB-S : 1-45 Mbaud
  - DVB-S2 : 3-30 Mbaud
- MPEG TS rates
  - 1-80 Mbps

Return Channel

- Modulation/coding
  - GMSK BT = 0.5
  - Rate 1/2, 2/3, 3/4 Turbo (GMSK)
- Symbol rate
  - 128, 256 Kbaud
- ATM data rates
  - 143 kbps

IDU and IFL Interface

- RF In
  - Connector: F (female)
  - Impedance: 75 Ohm
  - Acquisition range : +/- 5 MHz
  - Frequency: 950 – 2100 MHz
  - Rx level: -65 to -25 dBm
- RF Out
  - Connector: F (female)
  - Impedance: 75 Ohm
  - Frequency: 2750-2900MHz (Ku band)
  - Tx level: 0 dBm

Performance

- IP data Throughput
  - Up-to2 Mbit/s IP forward
  - Up-to 143 kbit/s ATM return

Management

- Web GUI

LAN interfaces

- Ethernet 10/100 baseT (RJ-45 connector)

Standards

- EN 302307: DVB-S2
- EN 300421: DVB-S
- EN 301790: DVB-RCS
- EN 50478: SATMODE
- EN 301428: VSAT spectrum usage
- IEEE 802.3: 10T Ethernet
- IEEE 802.3: 100TX Ethernet

Routing Protocol

- RFC 768: UDP
- RFC 791: IP
- RFC 792: ICMP
- RFC 793: TCP
- RFC 826: ARP
- RFC 959: FTP
- RFC 2131: DHCP
- RFC 2186, 2187: Caching protocols
- RFC 2096: IP forwarding

Power Supply

- Power supply: 210-260 VAC, 50 Hz

Environment

- Operational: 0 to 40 deg C * non condensing
- Storage: -40 to 70 deg C up to 95% condensing
- Humidity: 10% to 70% (non-condensing)

Sizes

- 190 x 50 x 167 mm

8.2 iLNB (outdoor unit)

Interface

- RF Out
  - EIRP NOMINAL: 35.8 + 20*log(f/14 GHz) dBW (with 75 cm antenna)
  - Frequency range: 13.75 – 14.5 GHz (Ku Band)
  - Polarisation: linear and orthogonal to Rx
- RF In

- Frequency: 10.7 – 12.75 GHz
- Polarisation Selection: Physical Mounting

Environment

- The ODU operates nominally under the following conditions:
  - Ambient Temperature: -30 to +60 °C
  - Weather protection: IP67
  - Humidity: 0% to 100% (condensing)
  - Solar Radiation: 500 W/m2 maximum
  - Rain: Up to 40 mm/h
  - Wind: Up to 80 km/h no deterioration
  - Survival wind speed: 180 km/h

Performance

- Transmission Characteristics
  - Output Power (nominal): + 27 dBm typ., 25.5 dBm min.
- Receiver Transfer Characteristics
  - G/T clear weather: 14 dB/K
  - Gain (over temp. & freq.): 57 to 70 dB ± 0.5 dB/10° 2-160 kbps

9 APPENDIX F – LICENSES

GNU software is used in this product:

You can download GNU Wget from the following location:
http://www.gnu.org/software/wget/

For more information about GPL: check out our website at
http://www.newtec.eu/index.php?id=gpl